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THE AEROPLANE SPOTTER

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Edited by PETER G. MASEFIELD
M.A. (Eng.) Cantab; A.F.R.Ae.S.
Technical Editor of "THE AEROPLANE."

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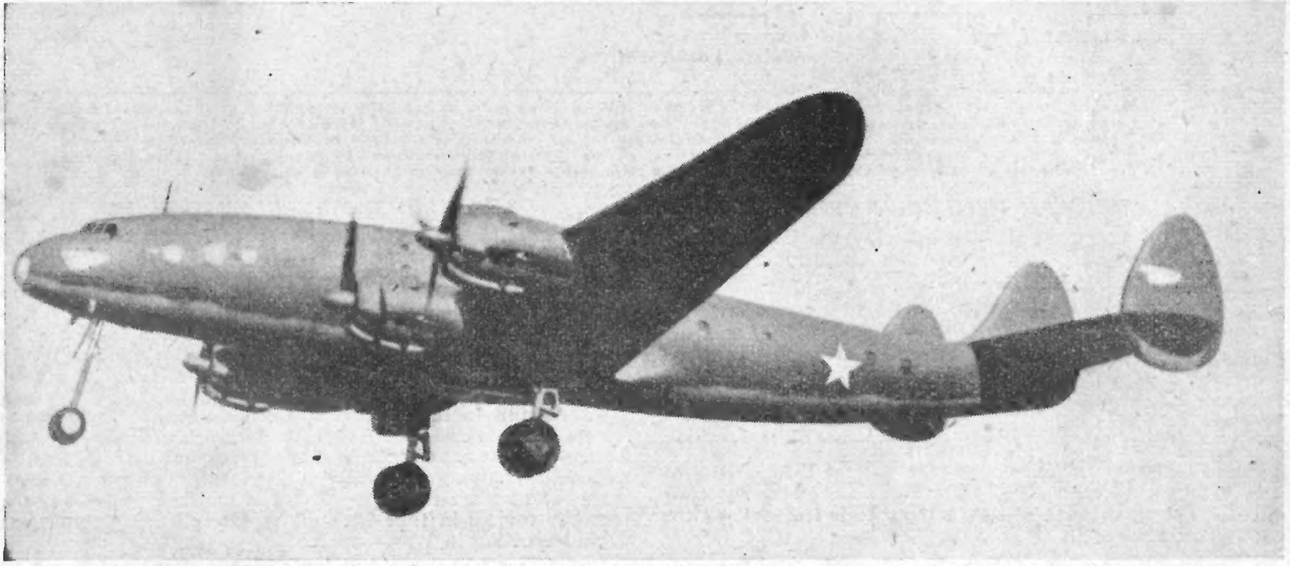


THE CONSTELLATION.—On January 9, 1943, the new Lockheed C-69, the Constellation military transport, flew for the first time at Burbank, California. It is reputed to be equipped to carry a light tank, about 60 troops or much freight, and to have a maximum range of 4,000 miles. This photograph shows the Constellation after its first take-off and before the tricycle undercarriage was retracted. The designed cruising speed is reputed to be 280 m.p.h. at 25,000 ft. with pressure cabin operating.

HAWKER TYPHOON single-seat fighters were reported in squadron service for the first time on January 21. In fact the Typhoon has been in action since Dieppe—August 19, 1942—and has scored a large number of victories over enemy aircraft. The bag up to the present includes Do 217s, Fw 190s, Ju 88s, Me 109s, Me 210s, several goods trains and a number of locomotives in France.

The first Fighter Wing of Hawker Typhoons was formed under Wing Commander Gillam, D.S.O., D.F.C. and Bar, A.F.C. That Wing destroyed a Do 217 over Dieppe—first blood to the Typhoon—and damaged several others. For many months no Typhoon was lost through enemy action. During the German fighter-bomber raid on London in daylight, on January 20, Typhoons shot down five out of the 15 enemy aircraft destroyed, without loss to themselves. Supermarine Spitfire IXBs accounted for all but one of the rest. Between December 15 and 24, 1942, Typhoons of the West Riding of Yorkshire Squadron under Sq. Ldr. R. T. Beaumont, D.F.C., shot down 11 enemy aircraft.

Thus the Typhoon has already shown itself to be a worthy successor of the Hurricane, and is likely to prove as versatile in service. The outstanding characteristics of the new fighter are speed and sustained hitting power. It is one of the biggest and heaviest fighters yet built and is also the most powerful. The compact 24-cylinder Napier Sabre H-type motor lies on its side in the very short nose, giving 2,350 h.p. for take-off and 1,780 h.p. at rated height. The top speed is more than 400 m.p.h. Unfortunately no photographs or silhouettes may be published yet, although the appearance of the machine is probably known to most people—including the enemy.

The Typhoon was the first and so far the only aeroplane to shoot down the new Messerschmitt Me 210 fighter-bombers over England. As a bomber-destroyer the Typhoon's qualities are devastating.

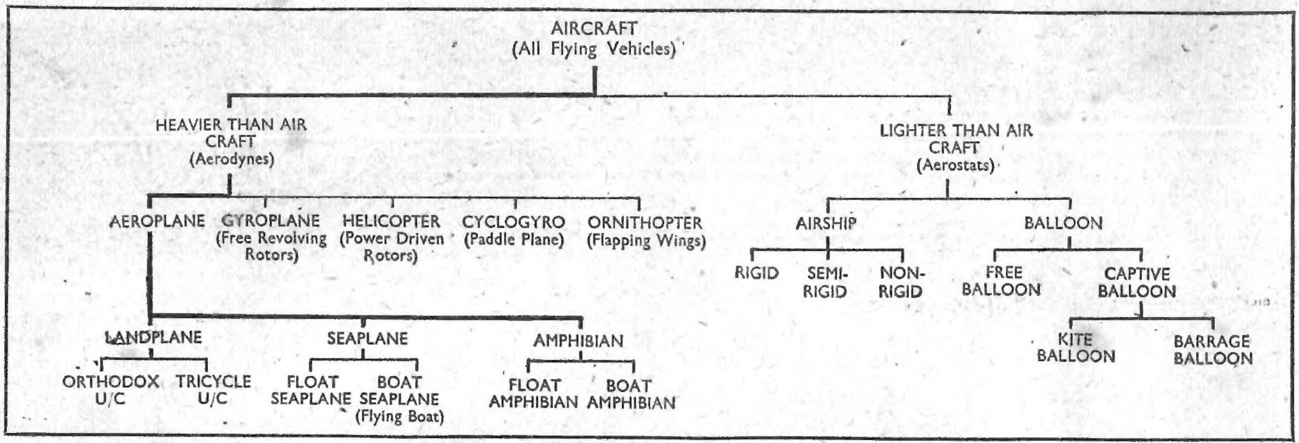
The Typhoon was designed by Sydney Camm and the Hawker Design Staff under him. The layout of the design was begun in March, 1937, seven months before the first production Hurricane flew. The prototype Typhoon was flown for the first time by Flt. Lieut. P. G. Lucas on February 24, 1940.

In addition to the Typhoon announcement, the past week has been full of aeronautical interest. Raid spotters had their first daylight exercise in earnest for many months on January 20 when Messerschmitt Me 109Fs and Fw 190A3s raided London carrying bombs. Only six machines reached the suburbs. This use of the high-speed fighter-bomber, flying low, shows how the enemy has copied our own tactics and that we may expect the repetition in other directions as well. This raid was not an armed reconnaissance but the best the overstretched Luftwaffe could do by way of reprisal for the recent raids on Berlin by the R.A.F.

The Luftwaffe's depleted forces in the West now appear to comprise six main types of operational aircraft—two types of fighter, the Fw 190A3 and the Me 109F4 and four types of bomber—the Do. 217E2, the Ju 88A6, the Me 110F and the Me 210. Of these the Me 110 and Me 210 are in France only in small numbers.

North American Mitchells recently took part in operations from Great Britain for the first time. The Mitchell carries a useful bomb load, is well armed with two gun turrets mounting 0.50-in. machine-guns and has a top speed of 284 m.p.h. It should prove a valuable addition to the R.A.F. Bomber Command.

NEWS OF THE WEEK



EXACTITUDE.—Precision in the written and spoken word is a sign of clear thinking and is as important as any other detail in aeronautical lore. There is an unfortunate tendency in some quarters to depart from precise terminology and to write of "an aircraft." The word aircraft is plural—like "geese." In the singular the object may be an aeroplane, a gyroplane, an airship or a balloon, or, if an aeroplane, to be still more precise, a landplane, a seaplane or an amphibian. The family tree of all aircraft is shown above—hallowed by years of usage. Those who pride themselves on accuracy of recognition should likewise pride themselves on accuracy of detail in all branches.

AMERICAN NOMENCLATURE

NAMES have now been decided upon by the United States Army Air Forces for more of their aircraft. The latest names are as follows:—

Maker.	Army number.	Maker's number.	U.S. name.	British name.
Douglas ...	C-47	DC-3	Skytrain	Dakota I
Douglas ...	C-53	DC-3A	Skytrooper	Dakota II
Douglas ...	C-54	DC-4A	Skymaster	—
Douglas ...	A-24	—	Banshee	—
Martin ...	B-26	179	Martian	Marauder

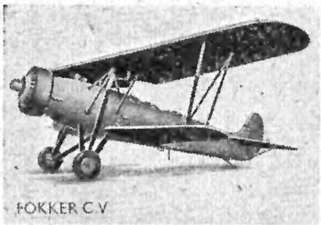
The name Skymaster is now adopted for the C-54 instead of the previous name Airmaster, which might have been confused with the Cessna C-145. The A-24 Banshee is the same as the SBD-3 Dauntless of the U.S. Navy.

THE RAID SPOTTERS' NOTE BOOK

Compiled by C. Griffith, 4 in. by 5½ in. 68 pp. Illustrated. Published Jan., 1943, by Charles Letts and Co., Diary House, London, S.E.1. Price 2s. 3d.

THE THIRD EDITION of this pocket compendium contains much useful spotter lore. Mr. Griffith has taken great pains to bring the book up to date. The hundred aeroplanes of which silhouettes and recognition details are given include practically all the latest types of British, American and German aircraft about which reliable information has been published. A notable addition to this feature is the inclusion of performance figures and dimensions. The rest of the Raid Spotters' Note Book—including an examination of recognition features, a method of studying silhouettes, a classification of types of aeroplane, and notes on various aspects of raid spotting—has been carefully revised in tune with the rapidly changing conditions of raid spotting in War.—C.F.A.

THE SPOTTERS' A.B.C.—XLVI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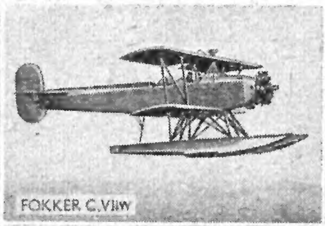
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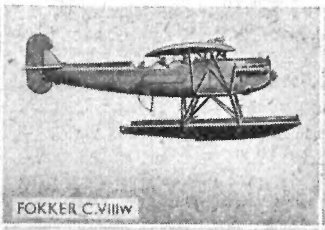
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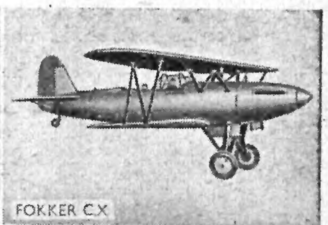
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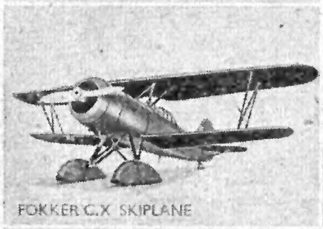
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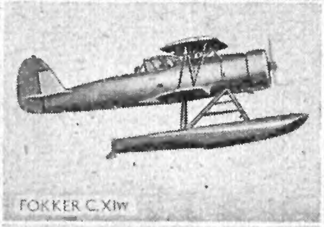
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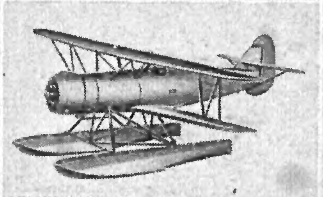
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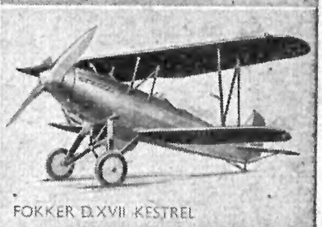
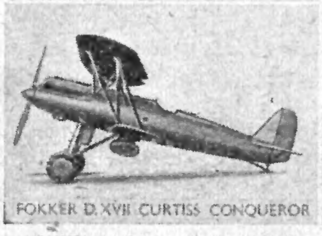
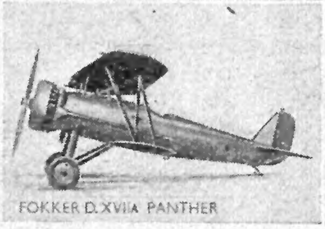

FOKKER D.XVII KESTREL


FOKKER D.XVII CURTISS CONQUEROR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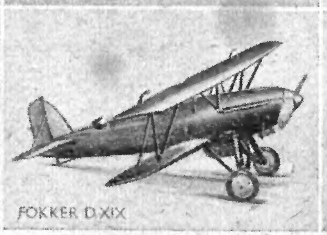
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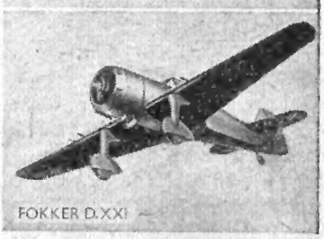

FOKKER D.XXI

FOKKERS.—A large number of different types of Fokker aeroplanes, made at Amsterdam in Holland, were flying in many countries of Europe when the War began. [562
Many may still be seen from time to time. The categories of Fokker types are designated by prefix letters as follows:—"B," flying-boats; "C," observation and reconnaissance; "D," single-seat fighters; "G," attack fighter-bombers; "S," trainers; "T," bombers; "W," seaplanes. The **Fokker C.V** is a two-seat general purpose biplane with a Bristol Pegasus M.3 motor and a top speed of 165 m.p.h. Hispano motors are also fitted. Many European nations held the manufacturing licence. The **C.VIIw** is a light reconnaissance seaplane with a 340 h.p. Armstrong Siddeley Serval motor and a top speed of 115 m.p.h. The **C.VIIIw** is a three-seat reconnaissance seaplane. With a Pegasus the top speed is 134 m.p.h. The photograph shows the version with a 450 h.p. Lorraine motor. The **C.X** two-seat fighter-reconnaissance biplane and light dive bomber was built in numbers. With a Rolls-Royce Kestrel motor the top speed is 199 m.p.h., with a Pegasus 212 m.p.h., Hispano 220 m.p.h. It has been used on skis in Finland. The **C.XIw** is a two-seat reconnaissance seaplane for catapult launching. With a Pegasus motor the top speed is 177 m.p.h. The **C.XIVw** is a similar type. With a Wright Whirlwind the top speed is 143 m.p.h. The **Fokker D.XVII** is a single-seat fighter biplane in the same category as the Hawker Fury and Fairey Firefly. Many were built. With the Hispano motor the top speed is 234 m.p.h., with the Kestrel 210 m.p.h., with the Armstrong Siddeley Panther 205 m.p.h. The **D.XIX** is a development of the D.XVII which has a top speed of 246 m.p.h. with the Rolls-Royce Kestrel. The **D.XXI** monoplane fighter has a top speed of 286 m.p.h. with a Bristol Mercury. It did well against the Luftwaffe in May, 1940.

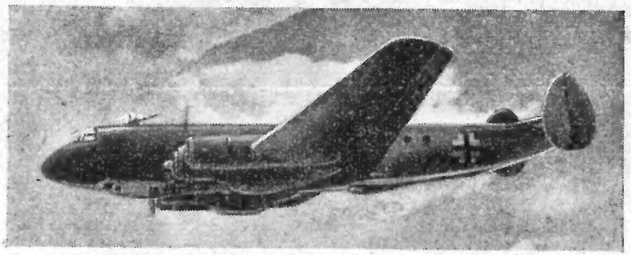
AIRCRAFT IN THE NEWS—LXXVI

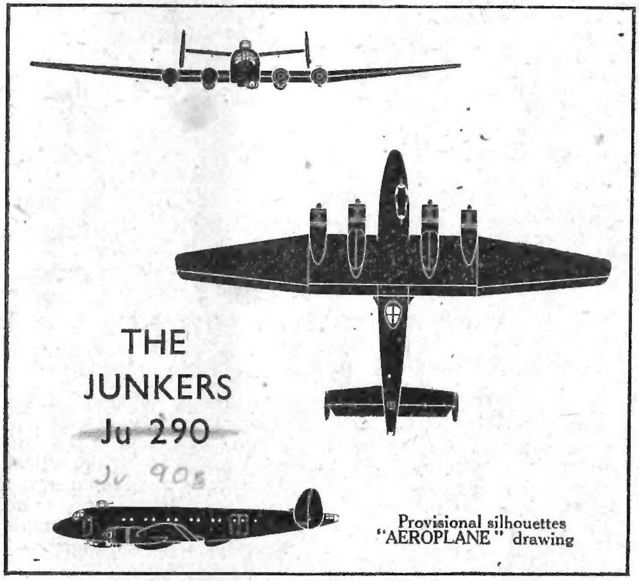
THE JUNKERS Ju 90S ~~and Ju 290~~

RUMOURS of a new four-motor Junkers monoplane developed from the Ju 90 have been current for some time. Now further details and photographs of the Ju 90s transport and what is presumed to be the Ju 290 bomber have appeared in the German papers.

Both are versions of the same aeroplane—the first a military transport the Ju 90s and the second a bomber—believed to be the Ju 290. The only differences appear to be in armament and stowage for bomb load. Both are direct developments of the Ju 90B—with a redesigned wing and tail unit.

Instead of the swept back leading and trailing edges of the early Ju 90 the new versions have a rectangular centre-section and straight tapered outer wings with square cut tips. The tail unit has outboard twin fins and rudders of rounded form instead of the previous angular type. The Junkers "double wing" type ailerons, flaps and rudders are now abandoned in favour of normal surfaces which present less drag.





Provisional silhouettes "AEROPLANE" drawing

What is believed to be the Ju 290 has a single gun top turret just behind the cockpit, underneath gun positions in two faired blisters and a cone turret in the tail. With four 1,000 h.p. Bramo Fafnir 323 motors the top speed of the transport version is 248 m.p.h. at 13,100 ft. The Ju 290 is about 15 m.p.h. slower. The undercarriage retracts backwards into large bulges under the inboard nacelles. Each leg has two wheels side by side. In general, this Ju 290 appears to be greatly inferior to the British and American heavy bombers.

The silhouettes show the bomber version and the following are its approximate characteristics:—

DIMENSIONS.—Span, 137 ft. 6 in.; length, 91 ft. 9 in.

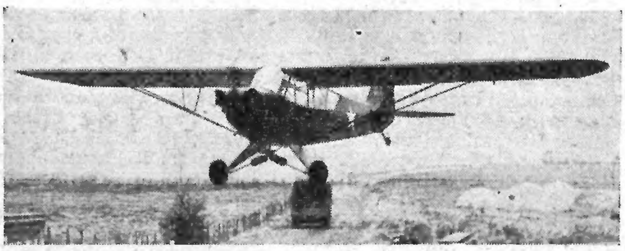
WEIGHT.—Loaded, about 55,000 lb.

PERFORMANCE.—Max. speed, about 233 m.p.h. at 13,100 ft. Range about 1,250 miles at 185 m.p.h.

POINTS OF RECOGNITION.—Four-motor low-wing monoplane with twin fins and rudders and dihedral angle on tailplane. Gun turret on top of fuselage ahead of wings and cone turret in tail.

CIVIL IDENTIFICATION—LXXVI

THE PIPER L-4 (O-59A, GRASSHOPPER)



MANY Piper L-4 ultra-light aeroplanes are now flying in this country with the United States Army. They are used for courier service and for spotting with the artillery, and can land and take off from small fields or roads.

The L-4 was originally known as the O-59 and O-59A, and was adopted by the U.S. Army in 1941. It and the Aeronca and Taylorcraft types were nicknamed the Grasshoppers. The O-59 was developed from the Piper Cub J-3 trainer which was used extensively by the Civilian Pilot Training Programme in the U.S.A. The L-4 is equipped for military observation and light liaison duties with two-way radio, and has two seats, in tandem. Another version, the LB-4, is used as a primary trainer by both the U.S. Army and the Navy, with a swivel seat to permit the observer to turn and work as a radio operator. A glider trainer version has been built for the U.S., and the Piper Coupé with side-by-side seating is also flying here.

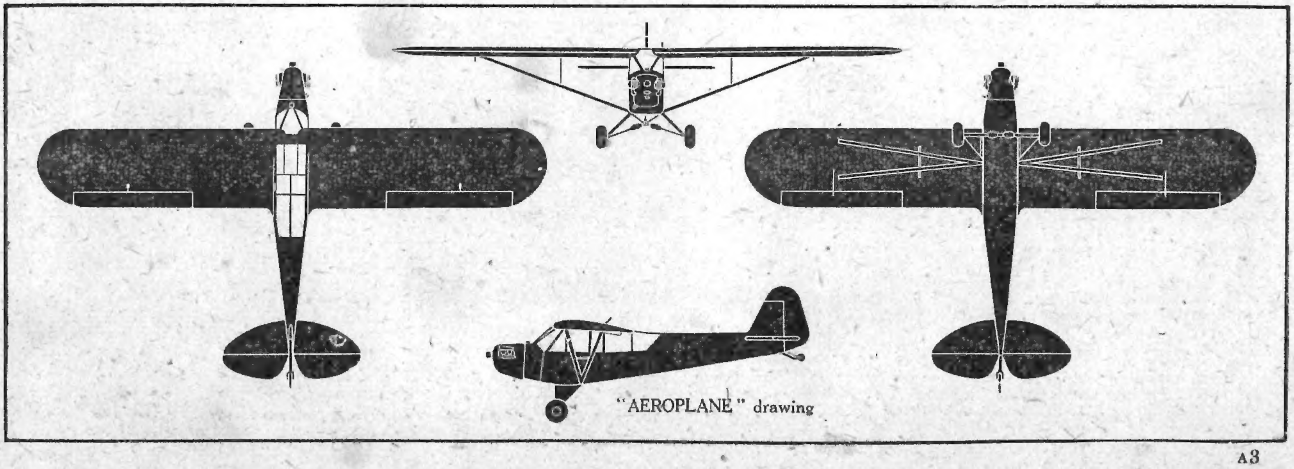
The L-4 (one 65 h.p. Continental motor) is a high-wing monoplane with single fin and rudder and fixed undercarriage. It is of mixed wood and metal construction with fabric covering.

DIMENSIONS.—Span, 35 ft. 2½ in.; length, 22 ft. 6½ in.; height, 6 ft. 8 in.; wing area, 173 sq. ft.; aspect ratio, 7.4.

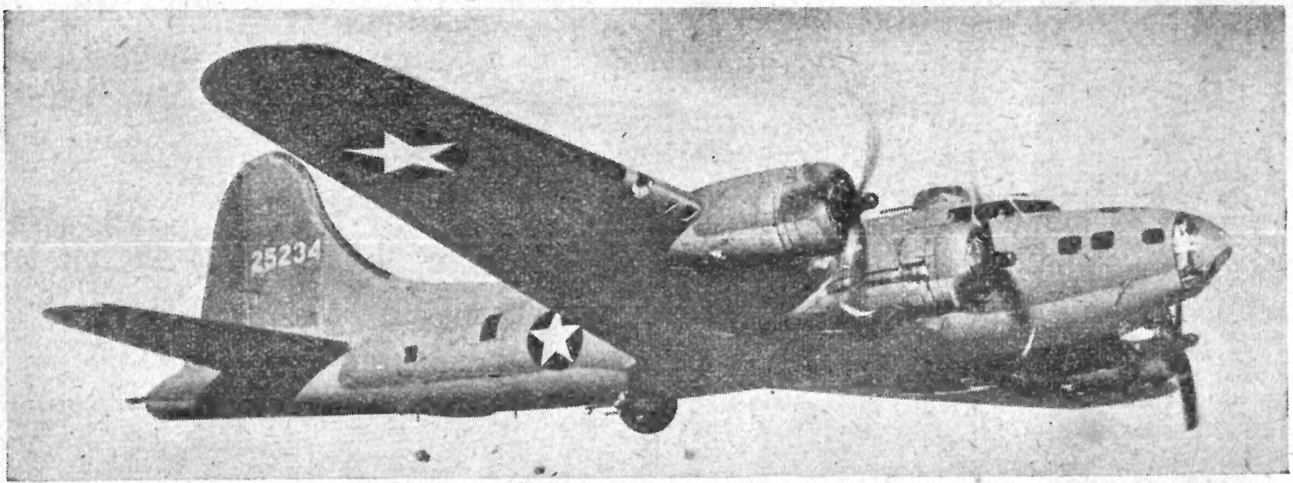
WEIGHTS.—Empty, 600 lb.; loaded, 1,160 lb.

PERFORMANCE.—Max. speed, 88 m.p.h.; range, 206 miles at 75 m.p.h. at 1,000 ft.; rate of climb, 675 ft. per min.; service ceiling, 12,000 ft.

POINTS OF RECOGNITION.—Small, high wing, braced cabin monoplane with rectangular wing and rounded tips. Vee struts. Rectangular fuselage, raised windscreen and large cabin windows, with window in roof of cabin also. Rounded angular rudder. Elliptical tailplane with deep cut-out in trailing edge. Fixed, divided undercarriage with two side Vees and two half axles hinged to tripod below fuselage.



"AEROPLANE" drawing



THE BOEING B-17F.—Speed, high flying ability and defensive power are combined in the Fortress II and result in an exceedingly formidable daylight raider. The external differences between the B-17F and the B-17E are the single-piece moulded nose and the "paddle-wheel" airscrew-blades of the newer version.

THE LANCASTER AND THE FORTRESS

IN the Avro Lancaster and the Boeing Fortress the United Nations have two fine bombers which are destined to play a great part in winning the War. The two have been compared many times—a comparison which is not always strictly fair because the two machines were designed to such different specifications.

However, as both have been used for the same type of daylight operations in which the requirements of speed, load, height and defensive power are identical, a direct comparison is possible. Having flown in both and having examined them carefully from every aspect, we believe that their qualities can be compared as follows:—

Speed.—Maximum speeds are almost identical although they occur at different heights: the Lancaster I, with Rolls-Royce Merlin XX motors, is best at about 21,000 ft.; the Fortress II, with turbo supercharged Wright Cyclone nine-cylinder motors, is best at about 25,000 ft. When both are operating with full load and armament, each at its best operational height, the Lancaster appears to be slightly the faster. The normal cruising speeds are identical.

Defence.—The Fortress IIA (B-17E) has approximately $4\frac{3}{4}$ times the hitting power of the Lancaster I for the same all-round field of fire. The B-17E mounts 12 machine-guns of 0.50 in. calibre (four of them in turrets) and one gun of 0.300 in. calibre. The combined muzzle-energy of these guns works out at some 1,990,000 ft.-lb. per sec.—the equivalent of 3,620 horse-power. The weight of fire per minute is 1,185 lb. That is a good deal greater than the combined fire-power of any other aeroplane to-day, although, naturally, all the guns cannot be brought to bear on one target at once.

The underneath "ball turret" is, perhaps, the best feature of the whole machine and might well be applied to other bombers in which underneath protection has proved a difficult problem. The rearward firing guns of large calibre are doubly effective because of the "Pursuit Effect." Furthermore, the American crews are all excellent shots and this counts for much at long range.

The Lancaster I mounts ten 0.303 in. machine-guns in four turrets. The combined muzzle-energy of these guns works out at about 422,000 ft.-lb. per sec. (767 h.p.) and the weight of fire 275 lb. per minute. The fire-power of the Lancaster has proved effective in action, but its defensive punch is a good deal less than that of the Fortress II.

Load.—The Lancaster has approximately three times the bomb-carrying capacity as the Fortress for the same ranges—a maximum load of 18,000 lb. of bombs can be stowed inside the vast bomb bay of the Lancaster. The bomb bay of the Fortress appears small judged by the more familiar bomb compartments of the British "heavies." The two bomb doors of the Fortress are approximately 11 ft. long, compared with the 33 ft. of the Lancaster. On the other hand, the bomb bay of the American machine occupies the whole depth of the fuselage with a narrow "cat walk" up the middle for communication between the front and rear sections of the fuselage. One must remember that the Fortress was designed for long ocean patrols over the Pacific, where range and tankage are the chief requirements. Certainly it could lift a much greater load of bombs than it could stow.

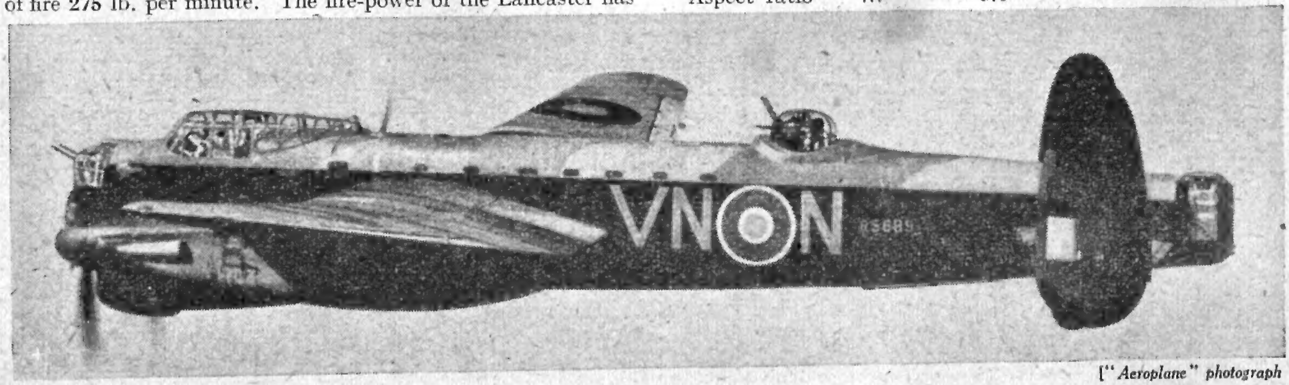
Range.—On maximum range with bombs the Lancaster has an advantage. It has tanks for 2,154 Imp. gals. of fuel against the 1,470 Imp. gals. of the Fortress II (2,600 U.S. gals. on the British machine against 1,762 U.S. gals. on the American). Consumption rates are about even. The Fortress can take a maximum of 2,500 U.S. gals. (2,075 Imp. gals.) without bombs by the installation of extra tanks in the bomb bay.

Height.—The Fortress has the advantage: it has an operational height with full load some 10,000 ft. higher than that of the Lancaster in similar conditions, and the Lancaster is not a low supercharged machine. The Fortress normally cruises at between 25,000 and 30,000 ft.

Thus, of the five attributes, each has the advantage in two—with one shared. The answer is probably that whereas the Lancaster is supreme at night the Fortress has a slight advantage by day in clear weather. The two together should make a magnificent team.—P.G.M.

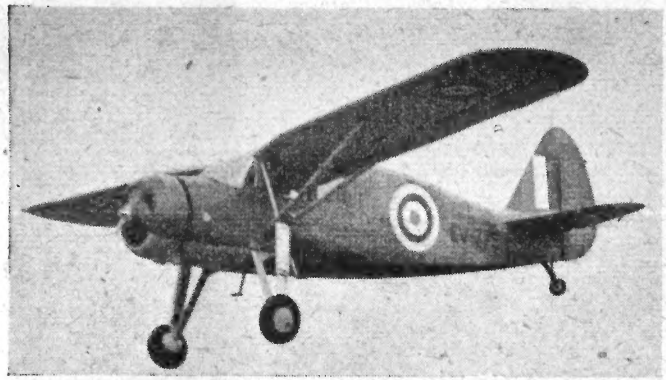
The following are comparative dimensions:—

	Lancaster.	Fortress II.
Span	102 ft. 0 in.	103 ft. $9\frac{3}{8}$ in.
Length	69 ft. 4 in.	73 ft. $9\frac{5}{8}$ in.
Height	20 ft. 0 in.	15 ft. 6 in.
Wing area... ...	1,297 sq. ft.	1,486 sq. ft.
Aspect ratio ...	8.0	7.35



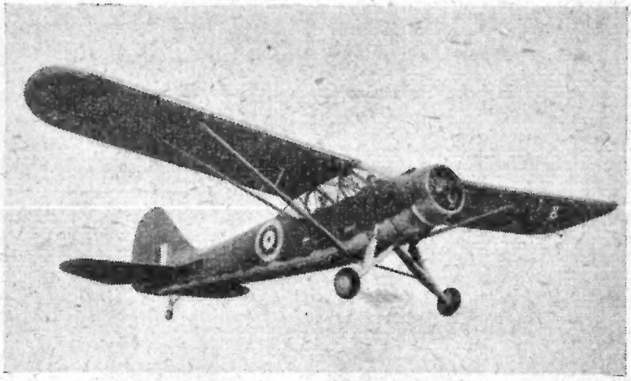
[*"Aeroplane" photograph*

THE AVRO LANCASTER I.—Speed, range and load-carrying capacity combine in the Lancaster to make it the foremost long-range heavy bomber in service to-day.



[“Aeroplane” photograph.

THE FAIRCHILD 24-W THE ARGUS (145 h.p. Warner Super Scarab motor). Four-seater. Span, 36 ft. 4 in.; length, 23 ft. 9 in. Max. speed, 134 m.p.h.



THE VULTEE-STINSON L-49B THE VIGILANT (285 h.p. Lycoming R-690 motor). Tandem seating. Span, 50 ft. 11 in.; length, 33 ft. 6½ in. Max. speed, 123 m.p.h.

HIGH-WING MONOPLANES—I.

By J. G. M. Miller

THERE ARE a large number of single-motor high-wing monoplanes being used by the R.A.F. and U.S. Army Air Forces for communication duties. They cause much confusion to Spotters because of their somewhat similar appearance and size. Among the more common are the D.H. Puss Moth, D.H. Leopard Moth, Stinson Reliant, Fairchild Argus, Taylorcraft Auster, Foster Wickner Warferry, Stinson Voyager, Vultee Vigilant, Heston Phœnix, Piper Cub, Aeronca, and Morane Saulnier M.S. 315.

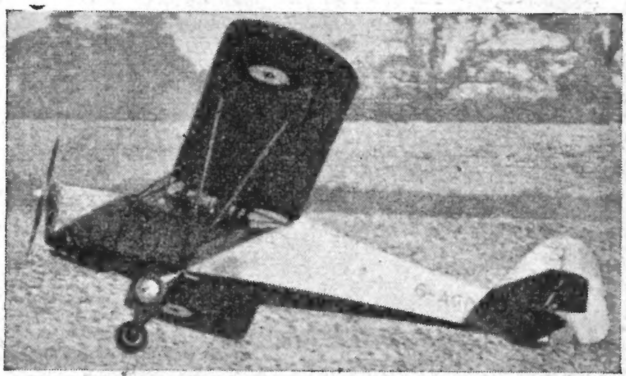
As these aeroplanes usually fly below 3,000 ft. use can be made of such recognition features as wing and undercarriage struts, and these should be carefully studied. The following notes on the various types may prove helpful in distinguishing between them.

Fairchild Argus.—This aeroplane is most likely to be confused with the Reliant. In the head-on view the construction of the undercarriage resembles a spider's web and in side view it appears as an elongated Vee. Untapered wings.

Stinson Voyager.—This aeroplane is easily distinguished from the other high-wing types by the very deep fuselage with a tall fin and rudder fixed on top of the fuselage and the short undercarriage legs.

Vultee-Stinson Vigilant.—The fuselage of this aeroplane is long with pronounced curved taper on the under-surface, and a long and high glasshouse. The legs of the undercarriage (in head-on view) meet like an inverted Vee on the underside of the fuselage. This is an important recognition feature.

Piper Cub.—This aeroplane is most like the Puss Moth and Warferry in flight. The fin and rudder are rather "D.H." shaped. The undercarriage legs, similar to those of the Wicko, distinguish it from the Puss Moth.

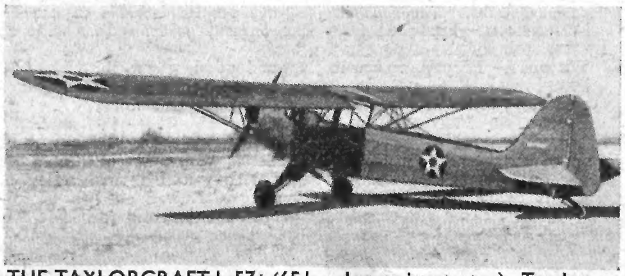


THE BRITISH TAYLORCRAFT AUSTER (90 h.p. Cirrus Minor motor). Span, 36 ft.; length, 22 ft. 10 in. Max. speed, 125 m.p.h.

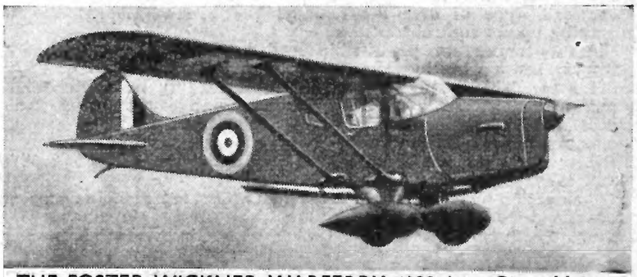
[There are at least eight different versions of the Piper Cub flying, the chief types of which will be dealt with in Aircraft Comparisons in the next issue. The one mentioned here is the Piper Cub Coupé. Silhouettes of the Piper L-4 can be found in Civil Identification this week.—ED.]

Foster Wickner Warferry.—The shallow elongated fin and rounded rudder are the most prominent recognition features of this aeroplane, and these must be used to distinguish it from the Puss Moth. The parallel struts supporting the wings, the clipped tailplane and the short tapering undercarriage legs are also worth remembering.

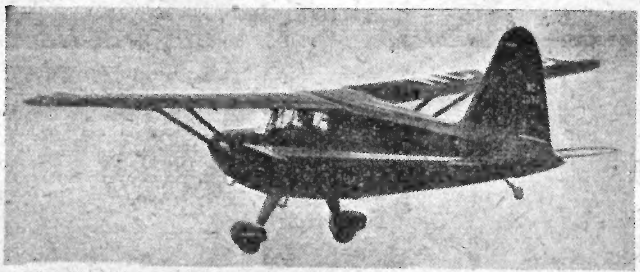
British Taylorcraft D (Auster I).—The long narrow fuselage with a large glasshouse and the triangular shape of the fin and rudder, are the chief characteristics of this aeroplane. In side view, the highly tapered undercarriage legs (wider at the top) are a helpful recognition feature; but the legs of the Warferry, Aeronca, and the Piper Cub are similarly constructed.



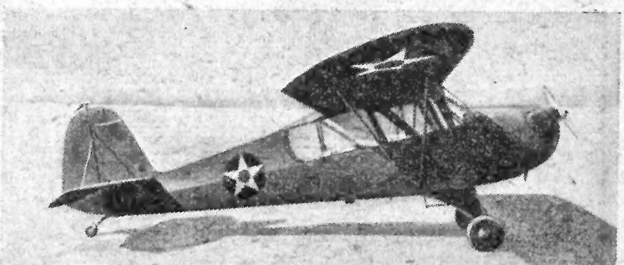
THE TAYLORCRAFT L-57A (65 h.p. Lycoming motor). Tandem seating. Span, 35 ft. 5¼ in.; length, 22 ft. 9 in. Max. speed, 102 m.p.h.



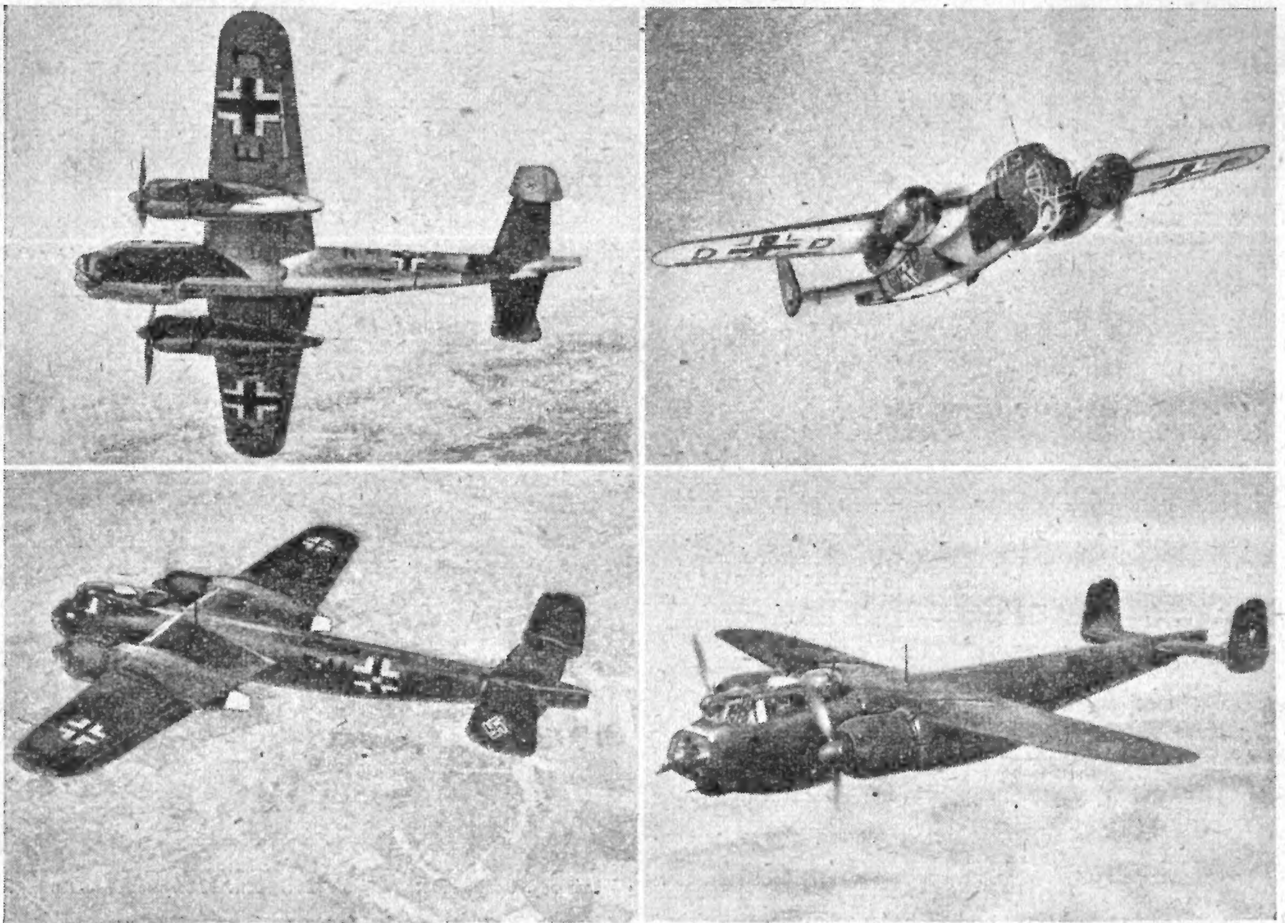
THE FOSTER WICKNER WARFERRY (130 h.p. Gipsy Major motor). Side-by-side seating. Span, 31 ft. 6 in.; length, 23 ft. 3 in. Max. speed, 140 m.p.h.



THE STINSON 105 VOYAGER (90 h.p. Franklin motor). Side-by-side seating. Span, 34 ft.; length, 22 ft. Max. speed, 115 m.p.h.



THE AERONCA L-58B (65 h.p. Continental motor). Tandem seating. Span, 35 ft.; length, 21 ft. 10 in. Max. speed, 100 m.p.h.



MAID OF ALL WORK.—Dornier Do 217E2s of the Luftwaffe, used as general purpose bombers on all fronts.

LESSER KNOWN TYPES—LVII

DORNIER Do 217E2

DORNIER Do 217E2 medium bombers are—with the various marks of Junkers Ju 88s—the standard offensive weapons of the Luftwaffe to-day. They are in service over all fronts on which the German Air Force is engaged and have proved to be formidable in action, combining a reasonably high speed (max. 324 m.p.h.) with a fairly heavy bomb load (max. 6,665 lb.) and fair defensive armament (eight guns, including one in a power-operated turret). The Do 217 is used for precision bombing, dive bombing, torpedo dropping and mine laying.

The Do 217 is a development of the Do 17Z with 4 ft. more span and 3 ft. greater length. Although the first versions had "umbrella" type dive brakes attached to the tail this apparatus now appears to have been abandoned in favour of the more conventional type of dive brake under the wings. Apparently tail braking upsets control.

At its maximum permissible loaded weight of 33,700 lb. the Do 217 has a wing loading of 64.8 lb. per sq. ft.—reckoned on the net area. This is probably the highest loading in service to-day and makes necessary assisted take-off. Unlike the Ju 88—which uses rockets—the Do 217 apparently is accelerated by means of a winch and a cable which attaches to a shackle in the nose. When the bomber has reached at least 70 m.p.h. the cable is cast off and take-off proceeds normally.

The earlier Do 217E1 had seven hand-operated machine-guns and one fixed and one movable cannon. The later Do 217E2 has an electrically operated single-gun turret in place of the two upper rearward firing guns. Although the later version was at one time reported to have BMW 802 18-cylinder radial motors, in fact it seems, like the Do 217E1, to be equipped with the 1,600 h.p. BMW 801 14-cylinder two-row radials. Presumably the larger motors are not yet in full production.

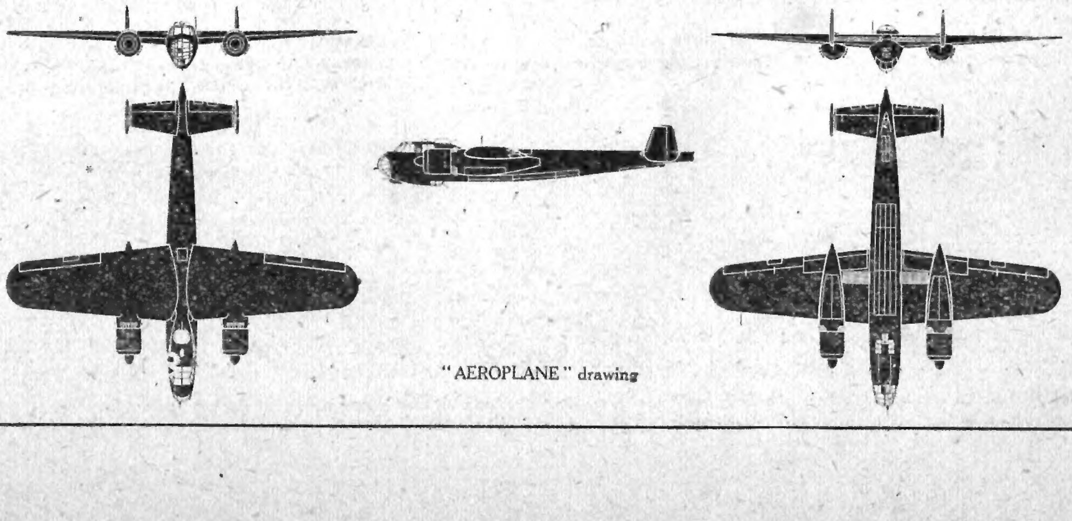
A crew of four is normally carried, all congregated in the compact cockpit-enclosure ahead of the wings in typically German fashion. The long bomb bay is behind with doors 20 ft. 6 in. long. A total of 5,550 lb. can be stowed horizontally internally and another 1,115 lb. externally under the wings. Alternatively external long-range fuel tanks can be carried there. The normal fuel load of 650 Imp. gal. is stowed in five tanks in the wings. The oil tanks take 88 gallons. The following figures are for the Do 217E2:—

DIMENSIONS.—Span, 62 ft. 5 in.; length, 56 ft. 6 in.; wing area (gross), 610 sq. ft.; aspect ratio, 6.26.

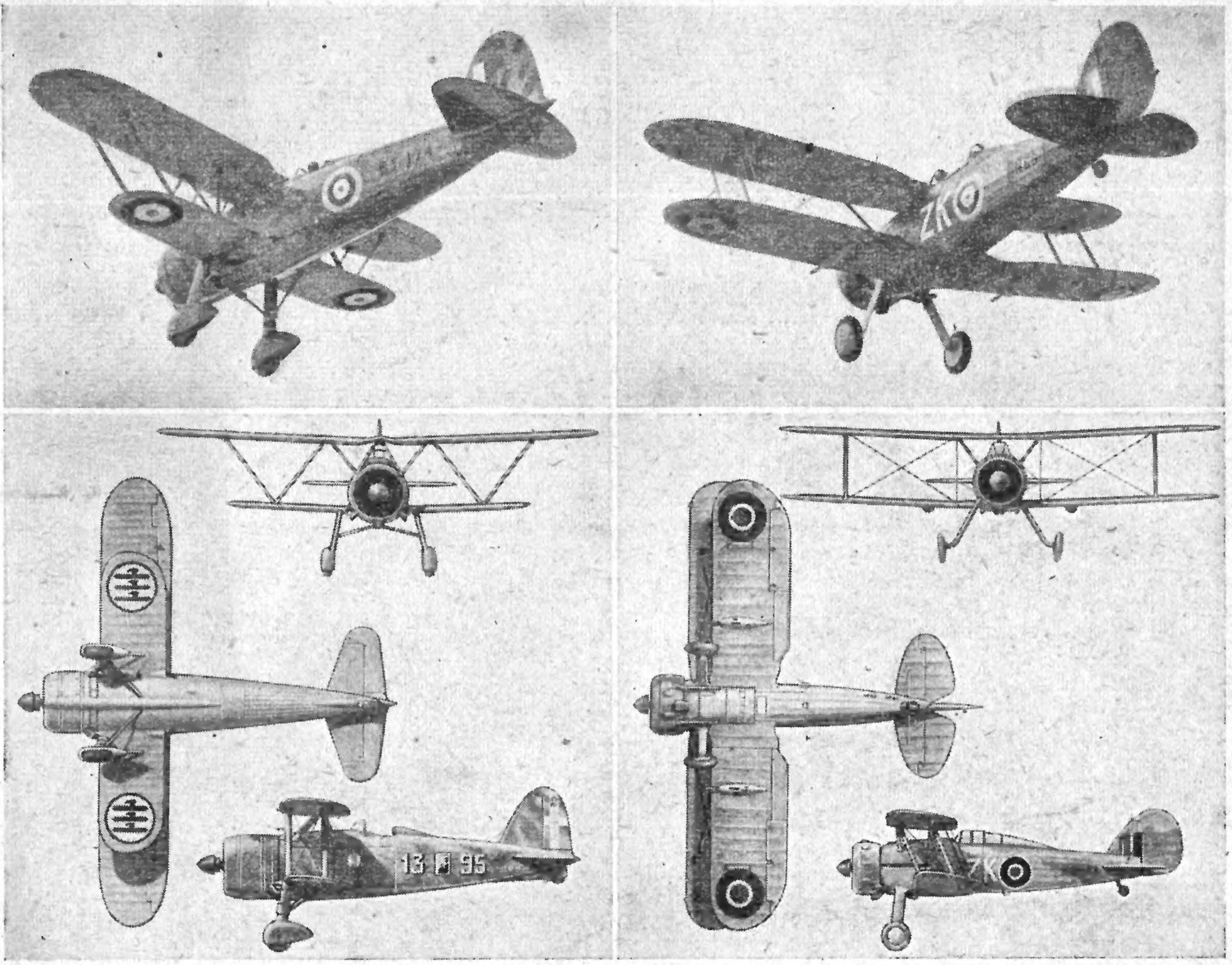
WEIGHTS.—Empty, 19,000 lb.; max. loaded, 33,700 lb.

PERFORMANCE (approx.).—Max. speed, 324 m.p.h. at 18,500 ft.; range, 1,575 miles at 267 m.p.h. with 6,650 lb. of bombs.

POINTS OF RECOGNITION.—Two-motor shoulder-wing monoplane with underslung radial motors, nacelles projecting behind trailing edge of wings and twin fins and rudders. Wings are of almost equal taper on leading and trailing edges with rounded tips. Deep nose projects below the underline of fuselage. Raised cockpit enclosure ends in single-gun turret. Fuselage projects beyond tailplane.

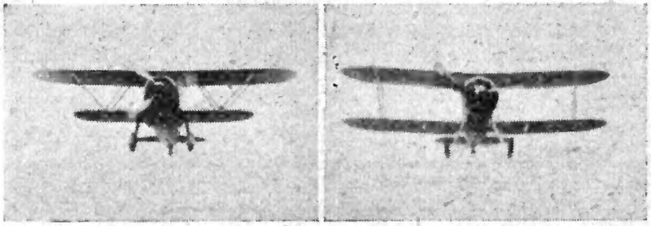


"AEROPLANE" drawing



DETAILED ANALYSIS.—The points by which the subjects of the previous recognition problems can be recognised are illustrated in the photographs and drawings of the Fiat C.R.42 Freccia (left) and the Gloster Gladiator I (right).

Aircraft Recognition



257 **PREVIOUS PROBLEMS.—(Left) A C.R.42 Freccia and (right) a Gladiator.** 258

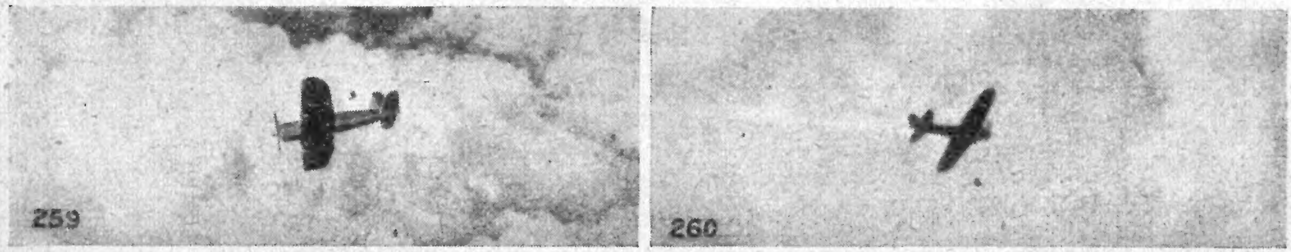
THE FIAT C.R.42 Freccia (one 840 h.p. Fiat A.74 R.C.38 14-cylinder two-row air-cooled radial motor) and the Gloster Gladiator I (one 840 h.p. Bristol Mercury IX 9-cylinder air-cooled radial motor) were the previous recognition tests. Both are single-seat biplane fighters, and though now obsolescent are still in service.

Fiat C.R.42s of the Regia Aeronautica were used in numbers in the early Libyan campaigns. Recently they have been encountered at night by our bombers over Northern Italy. Designed for manœuvrability, the C.R.42 has a top speed of 274 m.p.h. and an armament of two machine-guns mounted on the motor cowling. At least one captured Freccia is flying in this country.

Recognition features from this angle of the Freccia are the unequal-span unstaggered wings with rounded tips and W-girder bracing, large radial motor, and semi-cantilever undercarriage with small spatted wheels.

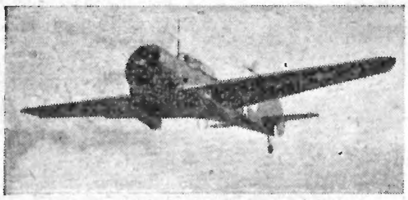
The Gloster Gladiator saw active service with the Royal Air Force at home and abroad at the beginning of the War, the most famous occasion being over Norway in 1940. It is highly manœuvrable and has a top speed of 250 m.p.h. and an armament of six machine-guns. Many are still flying on communications and meteorological duties.

Points of recognition from this head-on view are the equal-span single-bay wings with positive stagger and rounded tips, short nose with radial cowling, and fixed cantilever undercarriage.

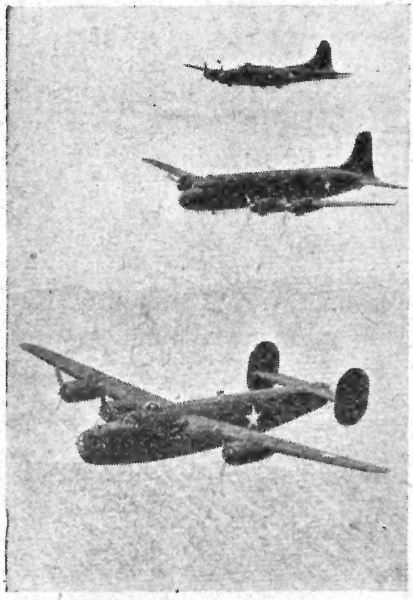


FOR IDENTIFICATION LXXVI.—Two more photographs to give practice in the recognition of Allied and enemy aeroplanes. What they are and notes on their characteristics will be published with two more photographs on February 11.

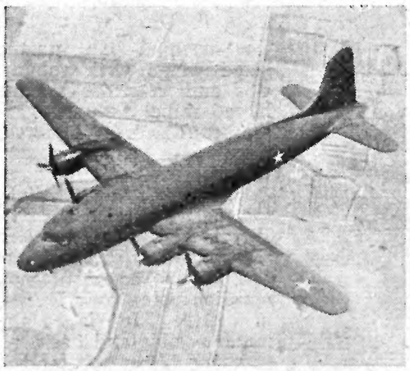
NEWS IN PICTURES



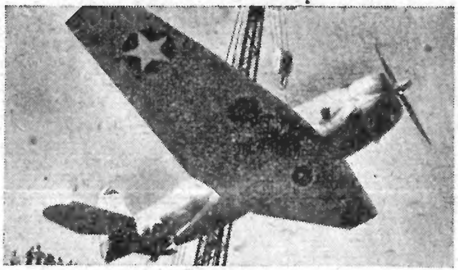
COMBAT TRAINING.—A Curtiss-Wright SNC-1 Falcon (CW-22) fighter-trainer shoots up a sleeve target above a flying-school of the U.S. Navy. Top speed 215 m.p.h.



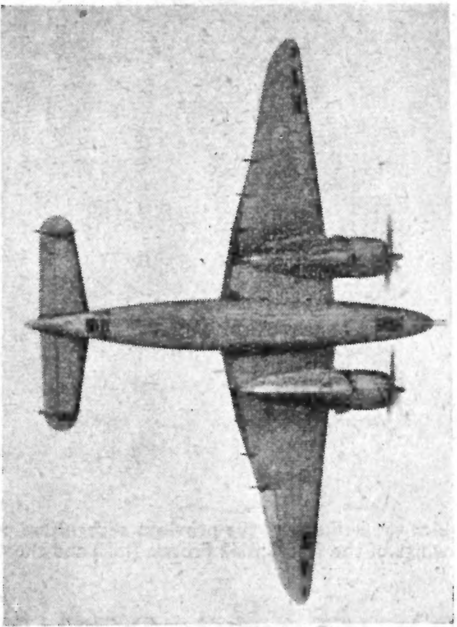
HEAVY STUFF.—Three American four-motor monoplanes, all of which are being built in California by the Douglas Aircraft Co. Inc. (Top to bottom) The Boeing B-17F, Fortress II; the Douglas C-54, Skymaster; the Consolidated B-24D, Liberator III.



DOUGLAS TRANSPORT.—The Douglas C-54 Skymaster, now in large scale production. It has accommodation for abou 50 troops. Top speed 264 m.p.h.

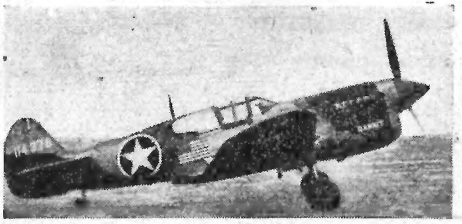


GOING ABOARD.—A Grumman TBF-1 Avenger torpedo-bomber of the U.S. Navy being slung aboard an American carrier. Top speed 270 m.p.h.

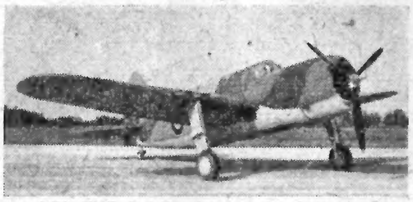


("*Aeroplane*" *photograph*)

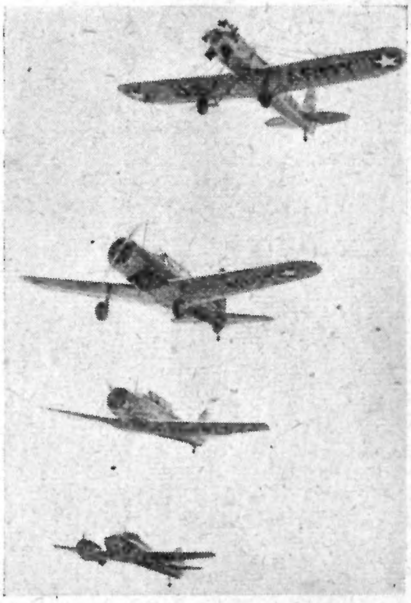
DAY BOMBER.—A Lockheed Vega 37, the Ventura I, of R.A.F. Bomber Command, in a vertical bank. Note the "kinked" trailing edge of the wings. Top speed 275 m.p.h.



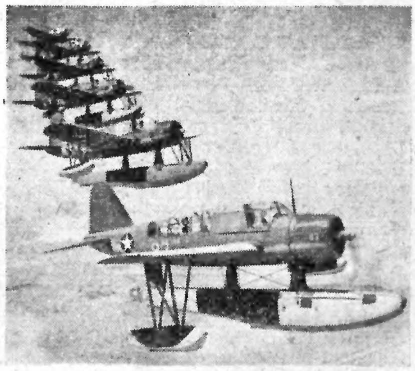
MERLIN POWERED.—A Curtiss P-40F Warhawk of the U.S. Army 12th Air Force in Algeria. Powered with the Rolls-Royce Packard Merlin 28 the top speed is 355 m.p.h. Armament, six 0.50 inch machine-guns.



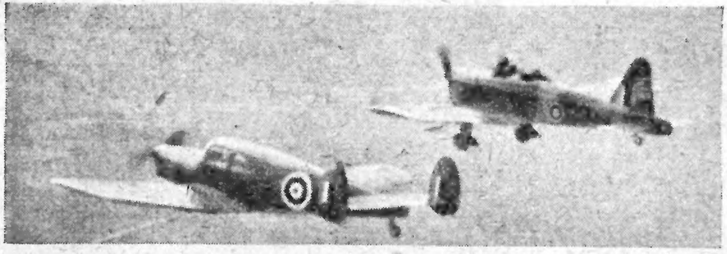
FOR THE R.A.F.—One of the first photographs of the Brewster 340, the Bermuda I, dive bomber in R.A.F. markings. Top speed 284 m.p.h.



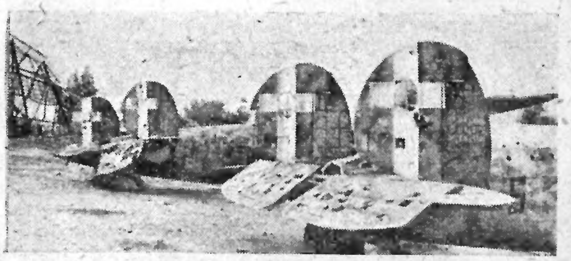
MIXED BAG—Four trainers of the U.S. Army Air Forces. (Top to bottom), a Ryan PT-22 primary trainer; a Vultee BT-13 basic trainer; a North American AT-6 advanced single-motor trainer; a Curtiss AT-9 advanced two-motor trainer.



KINGFISHERS.—A formation of Vought-Sikorsky OS2U-3 Kingfisher observation floatplanes of the U.S. Navy. Top speed 170 m.p.h.



NEW BRITISH TRAINERS.—Two new trainers for the R.A.F. at the Empire Central Flying Training School. (Left) The Phillips and Powis Miles M-28 cabin monoplane; (right) the Miles M-18, Magister II tandem trainer. This is the first photograph of these new aeroplanes.



AVE ET VALE.—The first photograph—and probably the last—of Italian Breda 88 two-motor fighter-bombers in service. The tails of two of these machines are seen shot-up at Benina aerodrome, near Benghazi. Little has been seen of the Breda 88 in service

THE NATIONAL ASSOCIATION OF SPOTTERS' CLUBS

GENERAL COUNCIL:

Hon. General Sec. (South): P. T. Sampson, 56, Forest Drive West, E.11.
Hon. General Sec. (North): Miss M. Duncan, 10, Eden Street, Riddrie, Glasgow.

Hon. Secs. of REGIONAL COUNCILS:

NORTHERN—T. Carver (pro tem.),
Royal Grammar School, Eskdale Tr., Newcastle-on-Tyne.

N.-EASTERN—W. M. Sowerby,
9, Grange Park Pl., Leeds.

N.-MIDLANDS—R. R. Langley,
80, Cornwall Rd., Kettering, Northants.

EASTERN—J. E. Barnes,
140, Moulsham Drive, Chelmsford.

LONDON—F. C. Palethorpe,
38, Bridgewater Road, Alperton, Middx.

SOUTHERN—A. Marple,
16, Bridge Street, Reading.

SOUTH-WESTERN—E. Griffiths,
25, Charlton Ave., Filton, Bristol, 1.

WELSH—W. H. Young,
21, Beaufort Pl., St. Julians Pk., Newport, Mon.

MIDLAND—G. C. Matthews,
239, The Broadway, Dudley, Worcs.

NORTH-WESTERN—H. Pearson,
12, Plymouth Street, Oldham.

SCOTTISH—Miss M. Duncan,
10, Eden Street, Glasgow.

SOUTH-EASTERN—P. Chinery,
"Little Hemingfold," Battle, Sussex.

NEW SPOTTERS' CLUBS

WE HAVE RECEIVED notice of the formation of the following new Spotters' Clubs:—

No. 489.—**St. George's S.C.**—(Hon. Sec.: H. Spacey, "Woodlands," Brooklands Road, Weybridge.) *South Eastern Region (No. 12.)*

No. 490.—**The Leicester Forest East S.C.**—(Hon. Sec.: E. P. Holland, 29, Park Drive, Leicester Forest East.) *North Midland Region (No. 3).*

No. 491.—**Pear Tree Youth Club S.C.**—(Hon. Sec.: A. W. Grattidge, 104, Pear Tree Street, Derby.) *North Midland Region (No. 3).*

No. 492.—**Youth House and 776 Flight A.T.C. S.C.**—(Hon. Sec.: F. R. Gibb, 35, Pinewood Road, Northampton.) *North Midland Region (No. 3).*

No. 493.—**The Leicester "Tigers" S.C.**—(Hon. Sec.: A. T. Gent, 32, Copdale Road, Leicester.) *North Midland Region (No. 3).*

No. 494.—**Rotol S.C.**—(Hon. Sec.: J. Tallett, 14, Orchard Way, Parton Lane, Gloucester.) *South Western Region (No. 7).*

No. 495.—**Zone Works S.C.**—(Hon. Sec.: J. Gazard, c/o Mawdsleys, Ltd., Zone Works, Dursley). *South Western Region (No. 7).*

No. 496.—**No. 1074 Sqdn. A.T.C. S.C.**—(Hon. Sec: G. Smith, Hospital Cottage, Whitby Wirral.) *North Western Region (No. 10).*

No. 497.—**"M.E.M."** Club.—(Hon. Sec.: R. A. Reynolds, 30, Tetley Road, Hall Green, Birmingham, 11.) *Midland Region (No. 9).*

No. 498.—**"Mosquito" S.C.**—(Hon. Sec.: Edward W. Day, 7, Dresden Road, London, N.19.) *London Region (No. 5).*

No. 499.—**653 Flt A.T.C. Highbury County School.**—(Hon. Sec.: F. W. Crawley, 25, Paulton Road, Midsomer Norton, Bath.) *South Western Region (No. 7).*

No. 500.—**"Typhoon" S.C.**—(Hon. Sec.: D. W. Daymond-Johns, 21, St. Aldate Street, Gloucester.) *South Western Region (No. 7).*

No. 501.—**No. 792 (Dunfermline High School) Sqdn. A.T.C.**—(Hon. Sec.: Ldg. Cdt. Kenneth. Stimpson, 3, Wallace Street, Dunfermline, Fife.) *Scottish Region (No. 11).*

No. 502.—**Daimler (Aero Engines No. 2) S.C.**—(Hon. Sec.: W. Heys, Hawkes End, Allesley, Coventry.) *Midland Region (No. 9).*

No. 503.—**G.E.C. (Coventry) S.C.**—(Hon. Sec.: H. Standbridge, 166, Binley Road, Stoke, Coventry).—*Midland Region (No. 9).*

No. 504.—**No. 1835 Sqdn. (1st Cosham) A.T.C. Portsmouth.**—(Hon. Sec.: K. R. Roberts, 29, Torrington Road, North End, Portsmouth).—*Southern Region (No. 6).*

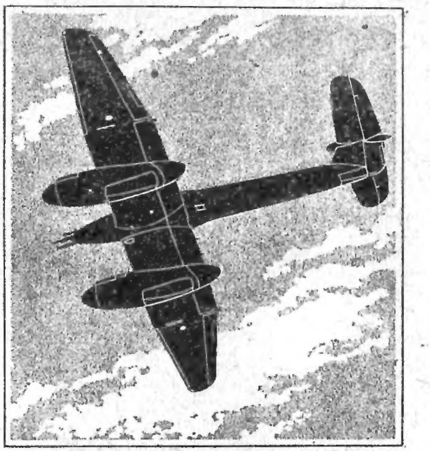
No. 505.—**Boulton Paul A.T.C. and Home Guard S.C.**—(Hon. Sec.: Cadet R. Scott, 43, Green Lane, Tettenhall Wolverhampton.) *Midland Region.*

No. 506.—**Hampstead Flt. 48F Sqdn. A.T.C.**—(Hon. Sec.: Cadet Irving, Berridge House, Fortune Green Road, N.W.6.) *London Region (No. 5.)*

No. 507.—**Hayes and Harlington R.S.C.**—(Hon. Sec.: J. E. Broughton, 27, Bankside, Southall, Middlesex.) *London Region (No. 5.)*

No. 508.—**"The Tosca Link S.C."**—(Hon. Sec.: L. W. Davison, 255, North Circular Road, Neasden, N.W.10.) *London Region (No. 5.)*

PHOTOGRAPHIC SILHOUETTES—XXV



The Westland Whirlwind I.

CHANGES IN CLUB SECRETARIES

THE FOLLOWING are the names and addresses of new Hon. Secs. of Clubs. They replace those previously published:—

No. 15.—**North Birmingham S.C.**—(Hon. Sec.: D. Flastilow, 280, Penns Lane, Walmley, Sutton Coldfield, Warwick.)

No. 59.—**Leicester Boys S.C.**—(Hon. Sec.: D. W. O. Heddle, 174, Letchworth Road, Leicester.)

No. 71.—**Wembley S.C.**—(Hon. Sec.: R. W. Spurgeon, 255, Woodcock Hill, Harrow, Middx.)

No. 112.—**Nottingham Boys High School S.C.**—(Hon. Sec.: J. L. Short, 1, Alexandra Gardens, Sherwood Rise, Nottingham.)

No. 148.—**Leeds.**—(Hon. Sec.: H. Ullyet, "Carthage," Haigh Road, Rothwell, Leeds.)

No. 192.—**Taunton School S.C.**—(Hon. Sec.: P. J. Stubings, Taunton School, Taunton, Somerset.)

No. 219.—**No. 1533 (Colwyn Bay County School) Sqdn. A.T.C. S.C.**—(Hon. Sec.: A. W. Billinghurst, Greystones, Elwy Road, Rhos-on-Sea, North Wales.)

No. 245.—**Northampton and District S.C.**—(Hon. Sec.: G. N. Vials, 18, The Crescent, Phippsville, Northampton.)

No. 262.—**Taylor, Taylor and Hobson S.C.**—(Hon. Sec.: A. G. Watts, 34, Thurlington Road, Braunstone, Leicester.)

No. 264.—**Daventry Grammar School S.C.**—(Hon. Sec.: J. Harding, 14, Sheaf Street, Daventry, Northants.)

SEVENTH AND EIGHTH EXECUTIVE COMMITTEE MEETINGS

THE SEVENTH and Eighth meetings of the Executive Committee of the General Council took place in London on Jan. 5 and Jan. 19 respectively. Mr. S. F. Sabin was in the Chair at both meetings.

Among many routine duties progress was reported at the Seventh Meeting on the provision of test cards. Notes for Regional Hon. Secretaries were drawn up and emphasis was placed on the constitutional ruling that the boundaries of the N.A.S.C. Regions must adhere to those of the Civil Defence Regions.

Preliminary financial reports showed that the Association was poor but solvent. Future prospects merit confidence.

The location of the 1943 A.G.M. was discussed but no decision was taken.

Mr. Sabin submitted a scheme for the simplification of the administrative side of the issue of M.H.S. equipment. This was discussed and accepted.

Final stages leading up to the provision of test cards were reached at the Eighth Meeting. Further discussions took place on the 1943 A.G.M.

A scheme for the raising of a substantial sum of money by the N.A.S.C. in connection with the "Wings for Victory" campaign was discussed. The scheme was rejected after consideration from all angles.

A decision was taken against the proposed extension of full membership to Civil Defence workers.

A proposal from the North Eastern Region asking for M.H.S. material to be sent direct to Club Training Officers was defeated in favour of the present scheme whereby material is issued to Club Hon. Secretaries.

TEST CARDS

A LIMITED SUPPLY of revised Third Class Test Cards will be available shortly. Regional Hon. Secretaries can now accept, from Club Hon. Secretaries, orders (with cash) for four or more sets. The test cards will be dispatched in strict rotation. Price per set (including postage)—3s.

A further announcement will appear on this page when the cards are ready for distribution.

RAID SPOTTERS' NOTE BOOK

ARRANGEMENTS have been completed for supplies of the third edition of the Raid Spotters' Note Book, compiled by C. Griffiths and published by Charles Letts and Co., to be made available to members of the N.A.S.C. at the normal retail prices through their club secretaries.

Club Hon. Secretaries should place their orders with the Hon. Asst. Organising Secretary. Remittances, made payable to the N.A.S.C. Library, at the rate of 2s. 3d. per copy, must accompany all orders.

FORTHCOMING EVENTS

Jan. 28.—**Doncaster.**—S.C. 106.—Training Lecture I, Raid Spotters' Course.—C.D. Instructional Room, 21, French Gate.—19.00 hrs.

Jan. 28.—**Westminster.**—S.C. 142.—Thornycroft House, Smith Square.—18.00 hrs.

Jan. 28.—**Guildford.**—S.C. 150.—The County Technical College, Stoke Park.—19.30 hrs.

Jan. 28.—**Crosby.**—S.C. 320.—St. Mary's College.—19.00 hrs.

Jan. 28.—**London.**—S.C. 483.—Wandsworth Town Hall.—20.00 hrs.

Jan. 29.—**Kentish Town.**—S.C. 16.—Talk by Mr. Pendrill on "General Principles of Raid Spotting."—The North Western Polytechnic, Prince of Wales Road, N.W.5.—18.30 hrs.

Jan. 29.—**Sunderland.**—S.C. 37.—Model Aircraft Session.—Town Hall.—19.30 hrs.

Jan. 29.—**Newbury.**—S.C. 51.—Messrs. Elliotts, West Street entrance.—19.30 hrs.

Jan. 29.—**Watford.**—S.C. 118.—Watford Public Library.—19.30 hrs.

Jan. 29.—**Hoddesdon.**—S.C. 128.—Second Class Test.—The Clock House.—19.30 hrs.

Jan. 29.—**Guildford.**—S.C. 150.—The County Technical College, Stoke Park.—19.30 hrs.

Jan. 30.—**Stafford.**—S.C. 60.—Contest with the Stafford Spotters' Club.—At Stafford.

Jan. 30.—**Maidstone.**—South Eastern Region.—Kent Committee Meeting.—Grammer School for Boys.—15.00 hrs.

Jan. 31.—**Boroughbridge.**—Branch 25.—Report of the Delegate to the Special Meeting in London.—"Glover Cup."—Talk by Major Izod of Northern Command Intelligence.—10.00 hrs.

Jan. 31.—**Plymouth.**—S.C. 299.—Third Class Test.—Toc H., Gilwell Street.—11.00 hrs.

Feb. 2.—**London.**—M.H.S. Monthly Meeting for Club Training Officers and Deputies.—Meeting No. 2.—Science Museum, South Kensington.—19.00.—(Presentation of Certificates and Hunt Trainer.)

Feb. 2.—**London.**—Meeting of Executive Committee of General Council.—Bowling Green Lane, E.C.1.—18.00 hrs.

Feb. 2.—**Southend.**—S.C. 1.—A.R.P. Hdqrs., 120, Victoria Avenue, Southend-on-Sea.

Feb. 2.—**N. London.**—S.C. No. 156.—Northern Polytechnic, Holloway Road, N.7.—19.00 hrs.

Feb. 2.—**Crosby.**—S.C. 320.—St. Mary's College.—19.00 hrs.

Feb. 2.—**Ratcliffe College.**—Second and Third Class series lectures.—Ratcliffe College.—20.00 hrs.

Feb. 3.—**Sunderland.**—S.C. 37.—Training Course 2.—Revision of Second Class Test.—Aircraft Recognition Bee.—"Sons of Temperance" Room, Norfolk Street.—19.30 hrs.

Feb. 3.—**Hastings.**—Study on 2nd Class Test.—White Rock Pav.—19.30 hrs.

Feb. 3.—**Rickmansworth.**—S.C. 81.—112, High Street.—19.30 hrs.

Feb. 3.—**Walton-on-Thames.**—S.C. 96.—Anglo-Iranian Oil Co., New Zealand Avenue.—19.30 hrs.

Feb. 3.—**Bristol.**—S.C. 104.—Junior Commercial Schools, Redcross Street.—18.30 hrs.

Feb. 3.—**Belfast.**—S.C. 151.—45, Howard Street.

Feb. 3.—**Sheffield.**—S.C. 178.—Victoria Hall.—19.00 hrs.

Feb. 3.—**Newcastle.**—S.C. 272.—Meeting at the Crows Nest Hotel, Haymarket.—19.00 hrs.

Feb. 4.—**Doncaster.**—S.C. 106.—Training Lecture 2—Raid Spotters' Course. C.D. Instructional Room, 21, French Gate.—19.00 hrs.

Feb. 4.—**Dudley.**—S.C. 113.—Lecture on Clouds and Flying Conditions. Hen and Chickens Inn.—19.15 hrs.

Feb. 4.—**Doncaster.**—Training Lecture 2—Raid Spotters' Course. C.D. Instructional Room, 21, French Gate.—19.00 hrs.

Feb. 4.—**Guildford.**—S.C 150.—The County Technical College, Stoke Park.—19.30 hrs.

Feb. 4.—**Wandsworth.**—S.C. 483.—Wandsworth Town Hall.—20.00 hrs.

Feb. 5.—**Huddersfield.**—S.C. 49.—Third Class Test.—Film Show.—A.R.P. Hdqrs., South Parade.—19.00 hrs.

Feb. 5.—**Hoddesdon.**—S.C. 128.—The Clock House.—19.30 hrs.

Feb. 5.—**Guildford.**—S.C. 150.—County Tech. Col., Stoke Pk.—19.30 hrs.

Feb. 5.—**Stapleford.**—S.C. 159.—Quizcraft.—Consti. Club.—19.00 hrs.

Feb. 5.—**Oxford.**—S.C. 162.—Talk by Sir Robert Pigot.—Oxford City Police Stn.—19.30 hrs. Raid Spotters only.

Feb. 5.—**Leigh.**—S.C. 236.—Annual General Meeting.—Municipal College.—19.00 hrs.

Feb. 7.—**Ratcliffe.**—S.C. 331.—General Meeting.—Ratcliffe College.—19.45 hrs.

Feb. 8.—**Downham.**—S.C. 454.—St. Andrews Hall, Burnt Ash Lane, Nr. Southover.—19.15 hrs.

Feb. 9.—**South London.**—S.C. No. 13.— St. Joseph's College, A.T.C. H'qrs., Crown Point, Streatham Common.—19.00 hrs.

Feb. 9.—**N. London.**—S.C. 156.—Northern Polytechnic, Holloway Road, N.7.—19.00 hrs.

Feb. 9.—**Crosby.**—S.C. 320.—St. Mary's College.—19.00 hrs.

Feb. 10.—**Blackfriars.**—S.C. 12.—Cinema, Unilever House, E.C.4.—18.00 hrs.

Feb. 10.—**Sheffield.**—S.C. 178.—Geo. Senior and Sons, Ltd., Ponds Forge, Sheaf Street.—19.00 hrs.

Feb. 10.—**Newcastle.**—S.C. 272.—Crows Nest Hotel, Haymkt.—19.00 hrs.

Feb. 11.—**Westminster.**—S.C. 142.—Thornycroft Hse., Smith Sq.—18.00 hrs. 18.00 hrs.

Feb. 12.—**Leeds.**—S.C. 148.—Sound Films.—Room 7c, Albert Hall, Cookridge Street.—18.30 hrs.

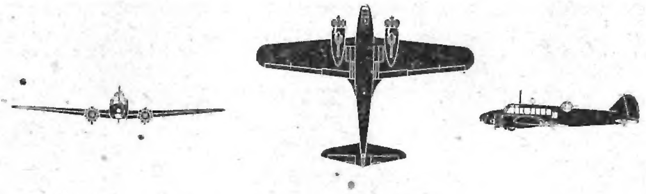
AIRCRAFT COMPARISONS—LXXVI

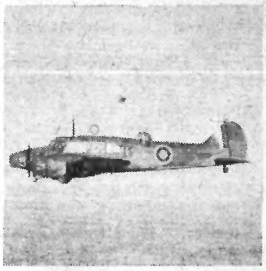
THE AVRO CONTINGENT

SPAN: 56 ft. 6 in.
LENGTH: 42 ft. 3 in.
HEIGHT: 13 ft. 1 in.
LOADED WEIGHT: 8,000 lb.
MAX. SPEED: 188 m.p.h. at 7,000 ft.
Two 350 h.p. Armstrong Siddeley Cheetah IX radial motors.

AVRO 652A THE ANSON I

1935

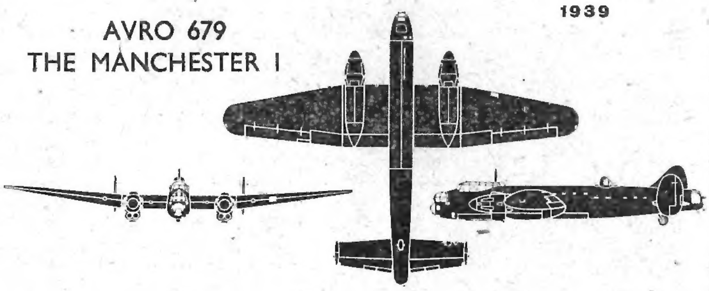


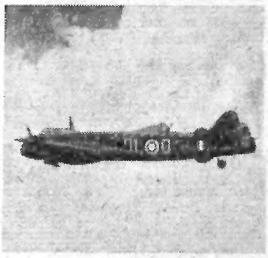


SPAN: 90 ft. 1 in.
LENGTH: 70 ft. 0 in.
HEIGHT: 19 ft. 6 in.
LOADED WEIGHT: 50,000 lb.
*MAX. SPEED: 280 m.p.h.
Two 1,950 h.p. Rolls-Royce Vulture X-type motors.

AVRO 679 THE MANCHESTER I

1939

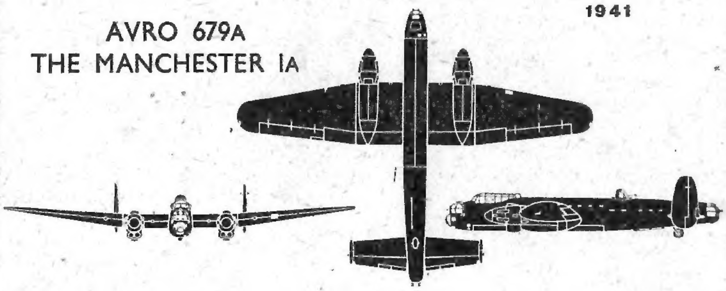


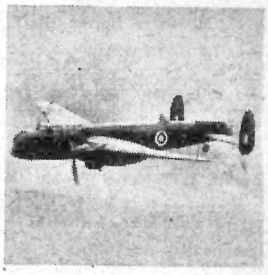


SPAN: 90 ft. 1 in.
LENGTH: 70 ft. 0 in.
HEIGHT: 19 ft. 6 in.
LOADED WEIGHT: 56,000 lb.
*MAX. SPEED: 280 m.p.h.
Two 1,950 h.p. Rolls-Royce Vulture X-type motors.

AVRO 679A THE MANCHESTER IA

1941

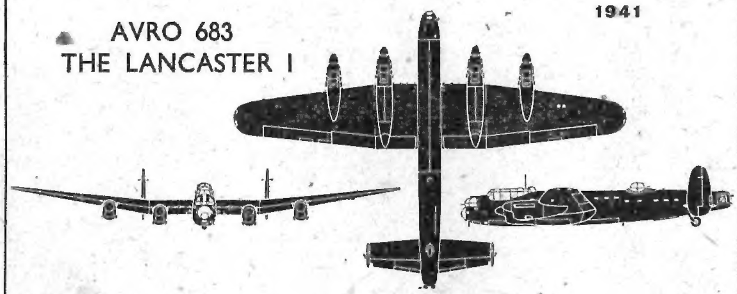


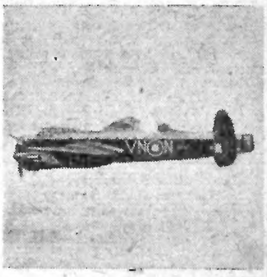


SPAN: 102 ft. 0 in.
LENGTH: 69 ft. 4 in.
HEIGHT: 20 ft. 0 in.
LOADED WEIGHT: 63,000 lb.
*MAX. SPEED: 280 m.p.h.
Four 1,280 h.p. Rolls-Royce Merlin 20 upright Vee motors.

AVRO 683 THE LANCASTER I

1941

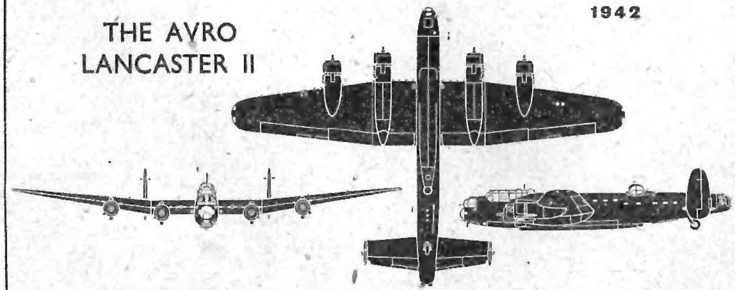


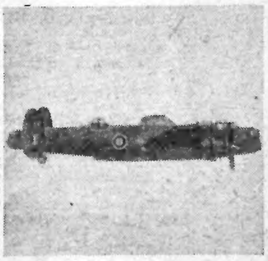


SPAN: 102 ft. 0 in.
LENGTH: 69 ft. 4 in.
HEIGHT: 20 ft. 0 in.
LOADED WEIGHT: 63,000 lb. approx.
No performance data available.
Four 1,600 h.p. Bristol Hercules radial motors.

THE AVRO LANCASTER II

1942





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* *The speeds quoted above are those published in German aeronautical journals. No British figures are available.*

STRIKING POWER.—Avro aeroplanes have played a great part in both the major Wars of this century. The old Avro 504 in its various versions occupied much the same place as the Avro 652A, the Anson, has done since 1939—first a bomber then a trainer. The Avro 679, the Manchester I, was built to specification P.13/36 with two Rolls-Royce Vulture X-type motors. It first flew in July, 1939. Later, the machine was redesigned to take four Rolls-Royce Merlin 20 motors and became the Avro 683, the Lancaster I. It made its first operational flight in March, 1942. The Avro Lancaster II, with four Bristol Hercules motors, is now taking its place beside the Lancaster I.

CORRESPONDENCE

NUMEROLOGY

I READ the article in The Aeroplane Spotter of Jan. 14, on the numbering of German aircraft, with great interest, as it has clarified several points which had been confusing to me. It has, however, raised several more, for the clearing up of which I should be very grateful. They are:—

1. If no two aircraft should have the same number, how do you account for the fact that there is a Junkers Ju 60 in addition to the Heinkel floatplane of that number?

2. Do the Fieseler Fi 2 and 5 fall into the scheme?

3. Do the various Dornier types conform to this arrangement?

4. Was there ever a Heinkel He 117?

Of the Fiat designs, have both Gabrielli and Rosatelli separate lists of design numbers? This question raises itself as there is both a Fiat G.2 and a Fiat A.P.R.2.

Was the de Havilland Swallow Moth the D.H.81? As it was designed to try out the Gipsy Minor engine, and 81 is the only vacant number between 0 and 95, and the Swallow Moth must have come before the Moth Minor, it seems reasonable to assume the connection.

I should like to take this opportunity to express my appreciation of the high standard maintained in The Aeroplane and The Aeroplane Spotter. I heartily endorse your views on the necessity for accuracy in silhouettes, as will, I think, everyone who has tried to lecture using both types—those prepared by The Aeroplane and the others.

R. G. Whillock, Sgt.,
1160 Squadron, A.T.C.

[The present German system of numbering dates from 1933, when the Nazis came into power. Before that each company had its own system. Hence the He 60 and Ju 60, the He 64, Ju 64 and Ar 64, all of which were designed before 1933. In general the numbers appear to have been allocated in batches of five. Thus Junkers extends from 86 to 90, Arado from 91 to 95 and from 96 to 100, Siebel from 101 to 105, etc., with a number of inconsistencies. The Fieseler Fi 2 and 5 were before 1933 and those numbers are now allocated to Erla. An interesting point about the Dornier numbering is that all odd numbers are landplanes (Do 17, Do 19, Do 23, Do 217, etc.), whereas all even numbers are boat or float seaplanes (Do 22, Do 24, Do 26, etc.). The He 117 was apparently a design only. In the Fiat numbering, Gabrielli and Rosatelli have separate numbering systems (G.2 and A.P.R.2). The original Swallow Moth was the D.H.81 with an 82 h.p. Gipsy IV motor. A modification, the D.H.81A, was flown with a thicker wing and enclosed cockpit. —Ed.]

HITTING POWERS

THE OTHER DAY we noticed in a daily paper a report of a statement by Colonel Knox, U.S. Navy Secretary, to the effect that the Grumman Wildcat fighter "Packs more wallop than the famed English Spitfire." This statement and others made in America suggest that in the Wildcat the Americans have a sensational aeroplane. Also it was claimed that the Wildcat was the best carrier-borne aircraft.

We would be pleased if you could tell us whether the Wildcat is indeed ahead of the Spitfire and Seafire as regards speed and armament.

So far you have given very little data about the Boeing B-17E Flying Fortress II. We wonder whether in the near future you will be including this aeroplane in your features—Lesser-known Types of Aeroplanes in Details.

P. Balchin and D. L. Hewitt.

[There are two methods of calculating hitting power or "wallop"—the first is the weight of fire in pounds of projectiles fired per minute, the second and possibly better, is the muzzle-energy of the bullets fired per second, reckoned in ft. lb. per sec.

The latest version of the Wildcat (the Grumman Martlet in the Royal Navy) has six 0.50-in. machine-guns. Their combined weight of fire is 580 lb. per min. compared with the 445 lb. per min. of the Spitfire and Seafire with two 20 mm. (0.787 in.) cannon and four 0.303-in. machine-guns. The combined muzzle energies are 977,500 ft.-lb. per sec. for the Wildcat and 865,000 ft.-lb. per sec. for the Spitfire. However, with the alternative armament of four cannon, the Spitfires' "wallop" is 650 lb. per min. and 1,392,000 ft.-lb. per sec. The Spitfire is something like 100 m.p.h. faster than the Martlet and has a much higher rate of climb and ceiling. As a result, considered as an all-round fighter, it is a great deal superior to the Martlet. There is no doubt that the 0.50-in. machine-gun is a very fine weapon which we have tended to neglect in Great Britain.

Some details of the B-17E and B-17F are included in this issue.—Ed.]

THE D.H. 9s

I WAS very interested in the letter published in your issue of Dec. 31 under the heading of "All the Gen," when you gave details and performance of the Bristol Monoplane.

Could you be so kind as to do the same for the D.H.9 and D.H.9A? I have photographs and outlines of them, but I have been unable to obtain any authentic information as to weight and performance. Leonard Sudul.

[There were three standard versions of the basic type D.H.9 of 1917. Their characteristics were as follow:—

D.H.9 (200 h.p., B.H.P. motor).—Span, 42 ft. 3 in.; loaded weight, 3,559 lb.; max. speed, 116 m.p.h. at sea level. This machine also had Fiat and Napier Lion motors fitted experimentally.

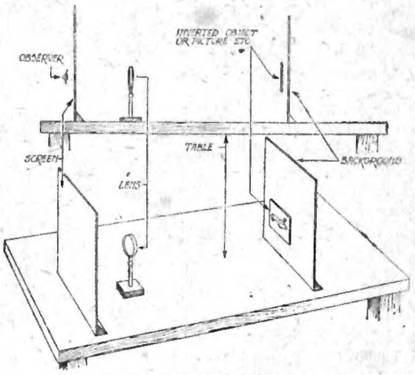
D.H.9A (375 h.p. Rolls-Royce Eagle motor).—Span, 45 ft. 11 in.; loaded weight, 4,815 lb.; max. speed, 128 m.p.h. at sea level. This was the first version of the D.H.9A.

D.H.9A (400 h.p. Liberty motor).—Span, 45 ft. 11 in.; loaded weight, 4,645 lb.; max. speed, 123 m.p.h. at sea level. This aeroplane remained the standard general-purpose bomber in the R.A.F. for 10 years.—Ed.]

THE "HANDFORTH" TESTER

IN The Aeroplane Spotter of Nov. 5 there was an interesting letter describing the "Minden Tester." This appears to be a very useful device, but in my opinion it has one disadvantage—it requires a pair of binoculars. Here are the details of an instrument which gives a similar effect but needs only a single convex lens. I used a small magnifying glass with a focal length of two inches.

The instrument consists of a screen to prevent the observer seeing the object directly; a convex lens and a background. The screen has a small hole in it through which the observer looks. The lens is placed so that the image formed is approximately 10 in. from screen; thus with a lens of 2 in. focal length the distance should be 12 in. The object is placed inverted in front of the background. The whole apparatus need not be mounted but can stand on a table. C. P. Handforth.



The "Handforth" Tester.

"You may relax, Sergeant—it is a North American P-51 Mustang."

The S.M. 84s

LAST SUMMER much controversy was caused concerning the correct designation of the Savoia Marchetti S.M.94 three-motor torpedo-bomber. In error you named it the S.M.84 in your May 21 issue; and on June 4 you cleared the matter up by publishing a photograph of the S.M.84, a two-motor monoplane.

Yet in the issue of Jan. 14 you published a photograph in "News in Pictures" of the S.M.94 with an inscription that it was an S.M.84. Can you clear the matter up please?

A. R. Wood.

[The three-motor torpedo-bomber with twin fins and rudders now in service in the Regia Aeronautica and developed from the S.M.79 is in fact designated the S.M.84 by the Italians despite the fact that an earlier two-motor transport with a single fin and rudder bore the same number.

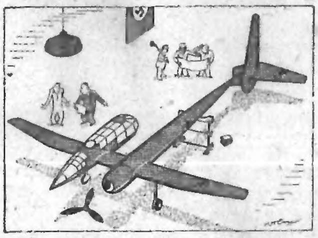
The Italians appear to have been confused by their own numbering system. The S.M.84 torpedo-bomber was previously called the S.M.94 and the bomber version of the Cant Z.1007bis, with twin fins and rudders, at one time known as the Z.1007ter, is now named the Cant Z.1008.—Ed.]

THE F.7/30s

COULD you tell me how the Hawker F.7/30, the P.V.3, was both designed to specification and a private venture. Also, what became of this specification? I remember that the Supermarine crank-winged Spitfire monoplane had this number, also the unorthodox Westland monoplane with the enclosed cockpit and engine behind the pilot. Was a contract ever given? G. F. Marshall.

[The Gladiator won the competition for the F.7/30 specification. The Hawker P.V.3 was a private venture on the general lines of the F.7/30. Westlands and Blackburns as well as Supermarines built fighters to this spec.—Ed.]

ODDENTIFICATION—XCII

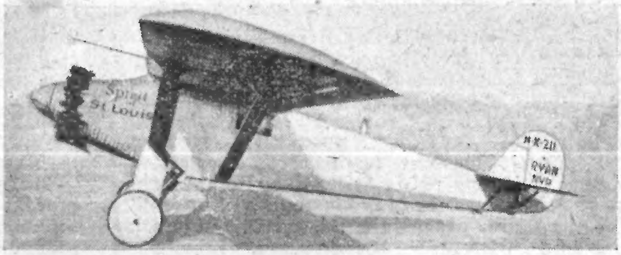


The Blohm und Voss Bv 141B

DO YOU KNOW?—XLVII

1. A four-motor British seaplane equipped with a large central float and two stabilising wing-tip floats?
2. The meaning of polyhedral?
3. A British aeroplane in which the undercarriage folds both backwards and forwards?
4. What is the Snargasher?
5. An aeroplane in which the tailwheel retracts sideways?
6. Why the Baltimore, a modern American bomber, is not fitted with a tricycle undercarriage?
7. A warplane, the height of which exceeds one-third of the span?
8. Why vortices are formed at wing tips?
9. The first aeroplane to incorporate, in any part of it, the Wallis geodetic construction?
10. What the initial K indicates before a Japanese aircraft type number (e.g. AICHI K-99)?

FAMOUS AIRCRAFT—III



THE RYAN TRANSATLANTIC, 1927.—Based on the Ryan M-1 light mail and passenger aeroplane, the Ryan NYP Trans-Atlantic monoplane, "Spirit of St. Louis" (one 200 h.p. Wright Whirlwind J.5 motor) was designed and built in 60 days as a competing machine for the Orteig prize of $25,000 (about £5,000) for the first direct flight from New York to Paris. After flying a few days earlier from San Diego, California, to New York, with one stop at St. Louis, Missouri, Charles A. Lindbergh left Roosevelt Field, New York, on May 20, 1927, and landed at Le Bourget Airport, Paris, the following day, covering the 3,610 miles (Great Circle course) in 33½ hours, an average speed of 108 m.p.h. The top speed of the Ryan NYP was 129 m.p.h., the span was 46 ft., and the weight, with the overload of 375 imp. gal. of fuel for the record flight, was 5,500 lb. There was no view forward from the cabin; Lindbergh used a periscope to look ahead. The Atlantic had been flown direct only once before Lindbergh's successful attempt in the Ryan; by Alcock and Whitten-Brown, in a Vickers Vimy in 1919. Lindbergh's flight set up a, then, World's Distance Record.

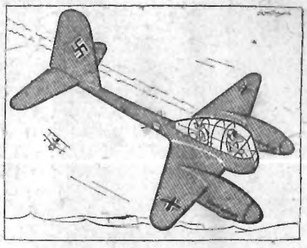
"BASIC AIRCRAFT RECOGNITION"

THE VERY GREAT demand for "Basic Aircraft Recognition" by C. H. Gibbs-Smith has resulted in the complete selling-out of the first edition. This reference book, with silhouettes, is being revised and a second edition will be available some time in April.

VOLUMES OF "THE AEROPLANE SPOTTER"

VOLUME III of THE AEROPLANE SPOTTER, bound, together with index, will be available in about a month's time, price 15s. This bound volume contains all the copies for 1942.

ODDENTIFICATION—XCIII



The Messerschmitt Me 210.

SOLUTION TO "DO YOU KNOW?"—XLVI

1. (a) Stampe et Vertongen (Belgium). (b) Short Brothers.
2. 2,205 lb. of bombs in the nose of the fuselage.
3. Russian ANT-25 long-range monoplane. Aspect ratio is 13.13.
4. To compete in the Guggenheim Safety Aircraft Competition in the U.S.A. in 1928. It took second place
5. Elimination of torque; straightening of slipstream, smaller diameter
6. (i) The late F. Barnwell. (ii) L. G. Frise. (iii) A. Hessel Tiltman.
7. North American Mitchell 1.
8. The ill-fated ANT-15 Maxim Gorky.
9. The Blohm und Voss Bv 138 flying-boat.
10. S.E. 200 (LeO H. 49), Latécoère 631.

R.O.C.C. JOURNAL

ARRANGEMENTS have been made to distribute order forms for the indices and other material as specified on the inside back cover of the last issue of the R.O.C.C. Journal. This is in order to avoid mutilation of copies. These forms can be obtained by Branch Secretaries only from R.O.C.C. Headquarters, Chobham, Surrey. The final date for receiving applications for this additional material has now been fixed for February 13.

THE SPOTTERS' GLOSSARY OF AERONAUTICAL TERMS

"SWITCH OFF."—A term used in starting an aero-motor to ensure that the ignition switches are off.

SYNCHRONISING GEAR.—A mechanism designed to permit the firing of a machine-gun or guns through the disc of a revolving airscrew. The best known synchronising gear was that developed by George Constantinesco in 1917, which remained in use until the introduction of wing-mounted guns shortly before the present War.

SYNCHROSCOPE.—An instrument for indicating whether two engines are running at the same speed.

SYNOPTIC WEATHER CHART.—A chart showing the weather by means of pressure variations at a given time over a particular area.

TAB.—A small hinged flap usually set in the trailing edge of a control surface. Its purpose is so to adjust the control that the aeroplane is properly trimmed when the controls are centralised.

TACHOMETER.—A revolution-indicator (or "rev. counter").

TAIL BOOMS.—Elongated girder or tubular structures used on some aeroplanes instead of the normal fuselage to carry the tail.

TAIL-FIRST AEROPLANE. — Sometimes called a "canard" or "duck," a form of aeroplane design in which the tail precedes the main supporting surfaces. Notable examples were the early Santos Dumont types, a Voisin, the Valkyrie of 1910/12, and the German Focke-Wulf Ente of 1927.

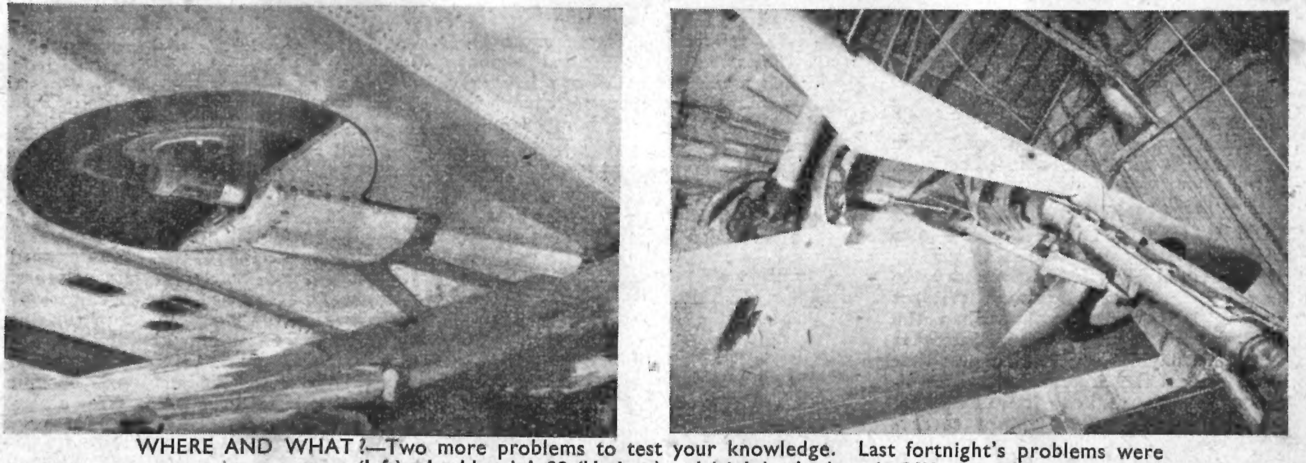
TAIL HEAVINESS.—The faulty characteristic of an aeroplane caused by the Centre of Gravity being too far back or by badly trimmed elevators.

TAILPLANE.—The fixed horizontal tail surface of an aeroplane.

TAIL SKID.—A lever and shoe which, mounted on a fixed bracket and fulcrum, takes the weight of the rear end of the fuselage on the ground. Nowadays it is usually replaced by a tail wheel.

TAIL SLIDE.—The backward and downward movement of an aeroplane which has been stalled after too steep a climb.

(To be continued.)



WHERE AND WHAT?—Two more problems to test your knowledge. Last fortnight's problems were (left) a Lockheed A-29 (Hudson) and (right) a Junkers Ju 86K.

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